ATTACHMENT 9: Past Performance
Hydrogeologic Characterization of the Eastern Turlock Subbasin

The City of Turlock has been successful in the planning and performance of water management projects and in cost-effective application of grant funding to groundwater projects. The grant-funded Turlock PCE Remediation project is highlighted here, along with attached Supporting Documentation. Descriptions of three additional projects and a tabular summary of all four projects are also provided.

City of Turlock: Downtown Turlock PCE Remediation Project

The Turlock GWMP defines eight management actions; one of these is *Regulation of the Migration of Contaminated Groundwater*. This action acknowledges localized contamination by industries, including dry cleaners. Specifications include coordination with Central Valley Regional Water Quality Control Board (CVRWQCB), development of strategies to minimize contaminant migration, coordination for monitoring, and information sharing (see **Supporting Documentation-1**). A prime example of successful action is the Downtown Turlock PCE Remediation Project.

Solvents used for dry-cleaning (e.g., PCE) had been discharged historically into the City's sewer and found in groundwater in the downtown area. The CVRWQCB and City have worked together for years to investigate, contain, and extract the groundwater plumes. This collaborative effort is well known through materials posted on the Turlock City News website and newspapers such as the Turlock Journal (see **Supporting Documentation-2**).

On January 6, 2009, the State Water Resources Control Board awarded $650,000 to the City from the Clean Up and Abatement Account to fund the City's ongoing investigation and remediation of the downtown PCE plumes (see **Supporting Documentation-3 and -4**). The funds were made available until January 31, 2012. The CVRWQCB selected a pump and treat (P&T) system as the preferred method for the mitigation. The City retained a consultant and approved a Work Plan to: 1) develop a baseline of current conditions, 2) update the position of the groundwater PCE plume using the existing monitoring well network, 3) characterize subsurface conditions for areas with known data gaps, and 4) provide design data for the proposed P&T system, including both stratigraphic and water quality data. The Work Plan also included a QA/QC process consistent with USEPA standards, specific data quality indicators, data review, and data management procedures (see **Supporting Documentation-5**). Addenda to the Work Plan provided for installation and testing of an extraction well and observation wells.

A series of sampling events better characterized the location and extent of the groundwater contamination and supported selection of the optimum location for the P&T system. The air stripper has been operational since December 2011 and has exceeded expectations in terms of mass removal – indeed the equipment's operation is only limited by maximum allowed air emissions.

The project involved significant coordination between the City, its consultant, and CVRWQCB who oversaw the project. ***Despite challenges posed by data gaps in the characterization of the plume, the project was completed within the budget and schedule*** (see **Supporting Documentation-6**).

City Project Name: Donnelly Park Irrigation Well

To reduce its reliance on potable water for landscape irrigation, the City of Turlock has constructed a number of shallow, non-potable wells for irrigating city parks and landscaped medians. Most recently, the City contracted for the installation of a shallow irrigation well at Donnelly Park, the location of a stormwater detention lake. The well was designed by City engineering staff and construction was undertaken by a contractor pursuant to the Public Contract Code. ***The City was able to make real-time adjustments to the schedule and budget when unanticipated challenges were encountered during the drilling program. This allowed the construction to progress without interruption and resulted in the timely provision of an irrigation supply. The field program began on 9/22/2010 and was completed on 10/12/2010 for a project cost of $94,058.***

City of Turlock: Water Storage Reservoirs SE and SW

To implement its water master plan, the City of Turlock made a number of improvements to its potable water supply and distribution system. Critically, two water storage reservoirs were constructed to increase the reliability of the City of Turlock's potable water system and to add capacity to meet peak water demands. The project involved the construction of two water storage reservoirs (tanks) at two separate locations, each with a storage capacity of 1 million gallons. ***The project was awarded on April 22, 2008 for $6,144,300 and was completed on November 13, 2009 – on time and within the budget***.

City of Turlock: Regional Water Quality Control Facility (RWQCF) Tertiary Improvements

In response to new Waste Discharge Requirements and a new NPDES Permit with the CVRWQCB, the City of Turlock needed to upgrade the Turlock RWQCF to include tertiary wastewater treatment. On September 4, 2003, a $35.4 million project was awarded to construct tertiary treatment facilities and additional improvements. By permit mandate, the tertiary treatment had to be fully operational by May 2006. ***The City was able to complete the improvements in December of 2005, six months ahead of schedule***. Since the improvements, the City has been able to comply with stringent discharge requirements as well as make recycled water available for beneficial reuse.

A summary of these four projects is provided below. Supporting documentation for the Downtown PCE Remediation Project is attached.

Project Summary – City of Turlock Past Performance

Project Name	Proponent	Funding Source	Cost	Project Duration	Inter-agency Collaboration
Turlock Downtown PCE Remediation	City of Turlock	SWRCB - CAA	$650,000,	3 years	Yes - SWRCB
Donnelly Park Irrigation Wells	City of Turlock	City funds	$94,000	6 months	No
Turlock Water Storage Reservoirs	City of Turlock	City funds	$6.1 million	19 months	Yes - DPH
Turlock RWQCF Tertiary Treatment	City of Turlock	City funds	$35.4 million	31 months	Yes - CVRWQCB